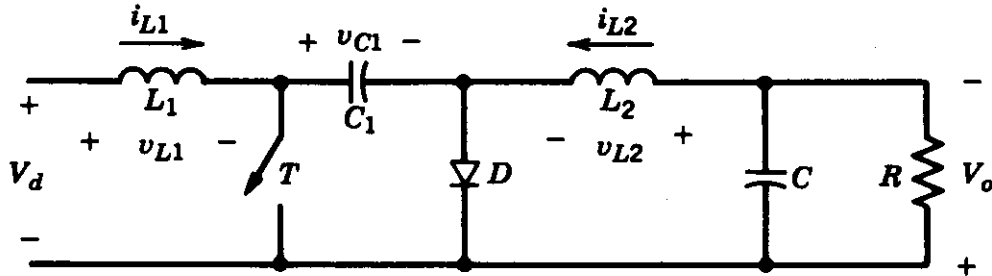


LAB 06A

Cuk Converter



Nominal Values

$$R=4\Omega$$

$$V_d=8.5V$$

$$L_1=L_2=10\ \mu H$$

$$R_{L1}=R_{L2}=10m\Omega$$

$$C_1=C_2=100\ \mu F$$

$$f_s=100kHz$$

$$\text{switch duty ratio } D=0.75$$

1. In steady state, obtain the following wave forms:

(a) v_{L1} , v_{L2} , i_{L1} , i_{L2}

(b) v_o , i_o , i_C

Check if the V_o , I_o , I_d results agree with the analytical calculations. Repeat for $D=0.25$.

2. Increase the load resistance to 40Ω . Obtain the following wave forms:

v_{L1} , v_{L2} , i_{L1} , i_{L2} . Check the average output voltage V_o with this load.

Calculate an analytical D so that V_o is kept constant to the same value as in 1) and check to see if results agree with the analytical calculations.

3. With $R=4\Omega$, obtain the peak-to-peak ripple in the output voltage and check to see if results agree with the analytical calculations.

4. Obtain the rms value of the current through L_2 and check to see if results agree with the analytical calculations.

5. Obtain the rms value of the current through L_1